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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/023,565
Filing Date: December 18, 2001
Appellant(s): CETEL, ALAN D.

Mr. Matthew L. Koziarz
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 24, 2010 and the supplemental appeal brief filed on December 1, 2010 appealing from the Office action mailed January 26, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

In the instant application appellants previously appealed the rejection of claims 1 to 3 and 5 to 14 on March 21, 2005. The Examiner was affirmed in the decision by the Board of Patent Appeals and Interferences mailed July 22, 2008.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claim cancelled: 4

Claim withdrawn but not cancelled: 15 to 19

Claims are pending: 1 to 3 and 5 to 19

Claims allowed: None

Claims rejected: 1 to 3 and 5 to 14

Claims on appeal: 1 to 3 and 5 to 14

(4) Status of Amendments After Final

All amendments have been entered. It is noted that no amendments after the Final Rejection mailed January 26, 2010 have been filed.

(**5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The rejection of claims 1 to 3 and 5 to 14 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The rejection of claims 1 to 3 and 5 to 14 under 35 U.S.C. 103(a) as being unpatentable over Mitsuhashi et al. (Mitsuhashi, EPO Document No. 0 855 449 A1).

The rejection of claims 1 to 3 and 5 to 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Esser et al. (Esser, WO 99/67435).

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112, First Paragraph

Claims 1 to 3 and 5 to 14 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

I. The claim limitation that the claimed alloys posses the recited properties "without application of a solution heat treatment" (claims 1 and 12, the last two lines), added by the amendment submitted December 2, 2008, does not find support in the application as filed.

Claim Rejections - 35 USC § 103

Rejection Based On Esser

Claims 1 to 3 and 5 to 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Esser et al. (Esser, WO 99/67435).

Esser teaches a directionally solidified (DS) nickel base super alloy (Abstract) having a composition that overlaps the alloy recited in applicants' claims (page 4, line 21 to page 5, line 15) and the use of the disclosed alloy in making gas turbine engine parts (page 5, lines 16 to 20). Esser teaches that the disclosed directionally solidified nickel based alloy typically has a plurality of grains as is recited in appellants' claims 1 to 3, 5

to 11, 13 and 14. It is noted that applicants' claim 12 recites that the claimed alloy is "for use in columnar grain directionally solidified articles" (claim 12, line 2, emphasis added by the Examiner). Thus, claim 12 does not require that the claimed alloy is actually in a columnar grain directionally solidified form. Esser also teaches that the disclosed alloy includes 0.4 to about 1.5 volume % of a phase based on tantalum carbide (page 6, lines 2 to 5) as is claimed in each of claims 1 to 3 and 5 to 14. In view of the use of the phrases, "up to" (claim 1, line 6) and "less than" (claim 12, line 5) used in the instant claims to describe the zirconium content of the claimed alloy, the applicants' claims are considered to encompass 0% zirconium. The following table compares Esser's disclosed alloy (page 4, lines 21 to page 5, line 15 and page 6, lines 2 to 5) and the alloy composition recited in applicants' independent claims.

	Esser	Applicants' Claim 1	Applicants' Claim 12
Cr	9.5-14%	10-13.5%	12%
Co	7 to 11%	8-10%	9%
Mo	1-2.5%	1.25-2.5%	1.9%
W	3-6%	3.25-4.25%	3.8%
Ta	1-6%	4.5-6.0%	5%
Al	3-4%	3.25-4.5%	3.6%
Ti	3-5%	3-4.75%	4.1%
Nb	0-1%	No Intentional Addition	No Intentional Addition
B	0.003-0.015%	0.0025-0.025%	0.015%
Zr	Silent	Up to about 0.05%	less than 0.02% Which

		Which encompasses 0%	encompasses 0%
C	0.05-0.11%	0.05-0.15%	0.1%
Phase Based On Tantalum Carbide	0.4 to 1.5 vol.%	0.4 to 1.5 vol.%	0.4 to 1.5 vol.%

Esser's silence with regard to the disclosed alloy containing any Zr is considered to mean that Esser's alloy does not contain Zr.

The claims and Esser differ in that Esser: (1) does not teach the exact same alloy proportions; (2) does not disclose the use of Zr; and (3) is silent with respect to the properties recited in the claims and (4) Esser does not explicitly recite that the alloy is not solution heat treated.

However one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because applicants' claims recite Zr proportions that encompass 0% Zr, that is, these claims do not require Zr. Further, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the alloy proportions taught by each of the references overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art references, particularly in view of the fact that;

> "The normal desire of scientists or artisans to improve

> upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Further, regarding the properties recited in the claims, it is the Examiner's position that in view of the fact that Esser's alloys have compositions that overlap the alloy compositions recited in the instant claims and have the exact same amount of a phase based on tantalum carbide, Esser's alloys would be expected to posses all the same properties as recited in the instant claims, In re Best, 195 USPQ, 430 and MPEP 2112.01.

> "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada,15 USPQ2d 655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best,195 USPQ 430, 433 (CCPA 1977)." see MPEP 2112.01.

Finally, regarding, the limitation that the alloy is not solution heat treated, it is the Examiner's position that this limitation is in effect a process limitation. However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the process steps recited in applicants' product by process claims do not necessarily lend patentability to the claimed product, MPEP 2113.

> "[E]ven though product-by-process claims are lim - ited by and defined by the process, determination of patentability is based on the product itself. The patent- ability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe* ,777 F.2d 695,698,227 USPQ 964,966 (Fed. Cir.1985.

Further, Esser's product, prior to the heat treatment taught by Esser is in the non-heat treated state as recited in the instant claims.

Rejection Based On Mitsuhashi

Claims 1 to 3 and 5 to 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsuhashi et al. (Mitsuhashi, EPO Document No. 0 855 449 A1).

Mitsuhashi teaches a nickel base columnar grain directionally solidified super alloy (page 3, lines 39 to 46) having a composition that overlaps the alloy recited in applicants' claims (page 3, lines 23 to 45) and the use of the disclosed alloy in turbine engine parts (page 3, lines 23 to 26). In view of the use of the phrases, "up to" (claim 1, line 6) and "less than" (claim 12, line 5) used in the instant claims to describe the zirconium content of the claimed alloy, the applicants' claims are considered to encompass 0% zirconium. Mitsuhashi teaches that the disclosed alloy is Zr free (page 3, lines 43 and page 7, lines 5 to 13). Thus, with respect to zirconium, Mitsuhashi is considered to encompass the instantly claimed alloy containing 0% zirconium. The following table compares Mitsuhashi's disclosed alloy (page 4, lines 15 to 20) and the alloy composition recited in applicants' independent claims.

	Mitsuhashi	Applicants' Claim 1	Applicants' Claim 12
Cr	12-14.3%	10-13.5%	12%
Co	8.5 to 11%	8-10%	9%
Mo	1-3.5%	1.25-2.5%	1.9%
W	3.5-6.2%	3.25-4.25%	3.8%
Ta	3-5.5%	4.5-6.0%	5%
Al	3.5-4.5%	3.25-4.5%	3.6%
Ti	2-3.2%	3-4.75%	4.1%
Nb	Silent	No Intentional Addition	No Intentional Addition
B	0.005-0.05%	0.0025-0.025%	0.015%
Zr	Free of (pg. 3, line 42 and pg. 7, lines, 5 to 13)	Up to about 0.05% Which encompasses 0%	less than 0.02% Which encompasses 0%
C	0.04-0.12%	0.05-0.15%	0.1%
Phase Based On Tantalum Carbide	Silent	0.4 to 1.5 vol.%	0.4 to 1.5 vol.%

The claims and Mitsuhashi differ in that Mitsuhashi: (1) does not teach the exact same alloy proportions; (2) does not disclose the use of Zr; (3) is silent with respect to the properties recited in the claims and the presence of tantalum carbides and (4) Mitsuhashi does not explicitly recite that the alloy is not solution heat treated..

However one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because as explained above, applicants' claims recite Zr proportions that encompass 0% Zr, that is, the claims do not require Zr and thus with respect to Zr content these claims are considered to be encompassed by Mitsuhashi's Zr free alloy. Further, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the alloy proportions taught Mitsuhashi overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in Mitsuhashi, particularly in view of the fact that;

> "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Further, regarding the properties recited in the claims and the presence of tantalum carbides, it is the Examiner's position that in view of the fact that the alloys taught by Mitsuhashi have compositions that overlap the alloy compositions recited in the instant claims, Mitsuhashi's alloys would be expected to posses all the same properties as recited in the instant claims, In re Best, 195 USPQ, 430 and MPEP 2112.01.

> "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada,15 USPQ2d 655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best,195 USPQ 430, 433 (CCPA 1977)." see MPEP 2112.01.

Finally, regarding, the limitation that the alloy is not solution heat treated, it is the Examiner's position that this limitation is in effect a process limitation. However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the process steps recited in applicants' product by process claims do not necessarily lend patentability to the claimed product, MPEP 2113.

> "[E]ven though product-by-process claims are lim - ited by and defined by the process, determination of patentability is based on the product itself. The patent- ability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe* ,777 F.2d 695,698,227 USPQ 964,966 (Fed. Cir.1985.

Further, Mitsuhashi's product, prior to the heat treatment taught by Mitsuhashi is in the non-heat treated state as recited in the instant claims.

(10) Response to Argument

Regarding the Rejection of Claim 1 to 3 and 5 to 14 Under 35 USC 112, First Paragraph

Regarding the rejection under 35 USC 112, first paragraph, on the basis that the claim limitation, "without application of a solution heat treatment", does not find support in the application as filed, applicants have cited paragraphs [0009], [0014] and [0018] of the specification as support for this limitation. The Examiner does not agree. Paragraph [0009] of the specification appears under the heading “BACKGROUND OF THE INVENTION” and is directed to the background in the art and is not directed to the disclosure of the instantly claimed invention. Additionally, paragraph [0009] discusses the effect of Hf on the melting point of a nickel alloy, the temperature window available for solution heat treating a nickel alloy containing Hf and that a solution heat treatment is typically necessary to achieve good creep strength. However, the alloy composition recited in the instant claims does not contain Hf and thus paragraph [0009] is again not directed to the instantly claimed invention. Further, paragraph [0009] relates to the creep strength of a nickel base alloy. Creep strength is not among the properties recited in the instant claims, for example, the claims recite the properties, hot corrosion resistance and oxidation resistance. So again, paragraph [0009] is not directed to the instantly claimed invention. In conclusion, for all of these reasons paragraph [0009] is not directed to the instantly claimed invention and the absence of a solution heat treatment and does not provide support for the claim limitation "without application of a

solution heat treatment". Further, paragraph [0009] does not recite the alloy composition recited in the instant claims.

Paragraph [0014] of the specification states that,

> "It would be further desirable to provide such an alloy which does not require a solution heat treatment in order to achieve adequate creep strength". (emphasis added by the Examiner)

While paragraph [0018] of the specification states,

> "However, such articles as cast may have adequate creep strength…such that solution heat treatment is unnecessary." (emphasis added by the Examiner)

Paragraph [0014] and the last sentence of paragraph [0018] are directed to the article having adequate creep strength in the absence of a solution heat treatment. Paragraphs [0014] and [0018] relate to the creep strength of a nickel base alloy. Creep strength is not among the properties recited in the instant claims, for example, the claims recite the properties, hot corrosion resistance and oxidation. So paragraphs [0014] and [0018] are not directed to the instantly claimed invention. In view of this, paragraphs [0014] and [0018] are not directed to the instantly claimed invention and the absence of a solution heat treatment and do not provide support for the claim limitation "without application of a solution heat treatment". Further, paragraphs [0014] and [0018] do not recite the alloy composition recited in the instant claims.

None of the cited paragraphs [0009], [0014] and [0018] of the specification establishes a nexus between the absence of a solution heat treatment and the properties recited in the claims nor the alloy composition recited in the instant claims.

Regarding the Rejection of Claim 1 to 3 and 5 to 14 Under 35 USC 103 in view of Esser

Appellants argue that the even if the claim limitation "without application of a solution heat treatment" (for example, claims 1 and 12, the last line) is considered a process limitation, the Examiner has improperly ignored the implication that the heat treatment history of the alloy or lack of heat treating history affects the microstructure and properties of the alloy. The Examiner is not persuaded. The process history does have an effect on an alloy but that does not preclude 2 alloys from having been made by different processes from having the same microstructure and properties, that is, there is more than one method of making a given alloy. Appellants have not shown that their instantly claimed alloy which has not been subjected to a solution heat treatment is, in fact, different than either Esser's heat treated alloy or particularly Esser's cast and not yet heat treated alloy.

Appellants argue that the claimed alloy and articles of the claims provide good properties including creep properties without subjecting the alloy to a solution heat treatment and that in comparison Esser's article is subjected to a solution heat treatment at 2300^0F and would result in parts having unacceptable creep and other properties. The Examiner is not persuaded. Appellants have not provided any objective evidence in support of their statement that the instantly claimed alloy and article have improved properties as compared to the heat treated alloy and article taught by Esser. "It is well settled that unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification do not suffice."

In re Deblauwe, 222 USPQ 191, 196 (Fed. Cir. 1984). Mere lawyer's arguments and conclusory statements in the specification, unsupported by objective evidence, are insufficient to establish unexpected results." In re Wood, Whittaker, Stirling and Ohta, 199 USPQ 137, 140 (CCPA 1978). Applicants' arguments cannot take the place of evidence in the record, MPEP 716.01(c)II. Further, in making this argument regarding improved properties of appellants' alloy and articles versus Esser's heat treated alloy and articles, appellants have not addressed how the properties of the instantly claimed alloy and article compare to the properties of Esser's alloy and articles that have not been heat treated. Finally, in the decision mailed, July 22, 2008, the Board of Patent Appeals and Interferences stated, in affirming this rejection (decision, page 17, the last paragraph);

> In addition, Appellants have provided no evidence to support their statement that the parts of the present invention would be destroyed at the temperatures applied in Esser. Appellants' Specification discloses heat treatments at temperatures of up to 2200°F compared to 2282°F in Esser. (FF 3 and 9). Appellants' Specification does not indicate that heat treatments applied at temperatures above 2200°F would be detrimental to the claimed articles. (FF 4).

Applicants argue that Esser's article prior to heat treatment "cannot be considered to be the claimed article" (appellants' brief, page 4, the last paragraph) in that such an un-heat treated article would be an unfinished article that does not possess the properties desired by Esser and would not possess "suitable oxidation and corrosion resistance for use in a turbine engine" (appellants' brief, page 4, the last paragraph). Appellants have provided no evidence in support of their statement that Esser's un-heat treated article would not possess "suitable oxidation and corrosion resistance for use in

a turbine engine". Further, when the products produced by the reference process are neither transitory nor ephemeral but are by nature tangible and permanent pending the subsequent treatment to which they are subjected, such products, though intermediate, are anticipatory of the product. Ex parte Brinton, 82 USPQ 112 (Bd. Pat. App. & Int. 1948).

Regarding the Rejection of Claim 1 to 3 and 5 to 14 Under 35 USC 103 in view of Mitsuhashi

Appellants argue that the even if the claim limitation "without application of a solution heat treatment" (for example, claims 1 and 12, the last line) is considered a process limitation, the Examiner has improperly ignored the implication that the heat treatment history of the alloy or lack of heat treating history affects the microstructure and properties of the alloy. The Examiner is not persuaded. The process history does have an effect on an alloy but that does not preclude 2 alloys having been made by different processes from having the same microstructure and properties, that is, there is more than one method of making a given alloy. Appellants have not shown that their instantly claimed alloy which has not been subjected to a solution heat treatment is, in fact, different than either Mitsuhashi's heat treated alloy or particularly Mitsuhahi's cast and not yet heat treated alloy.

Appellants argue that the claimed alloy and articles of the claims provide good properties including creep properties without subjecting the alloy to a solution heat treatment and that one of ordinary skill in the art would not consider Mitsuhashi's

unfinished, that is, Mitsuhashi's unheat treated intermediate article "to be an article that has suitable oxidation and corrosion resistance for use in a turbine engine" (appellant's Brief, page 5, the penultimate paragraph). The Examiner is not persuaded. Appellants have not provided any objective evidence in support of their statement that the instantly claimed alloy and article have improved properties as compared to the heat treated alloy and article taught by Mitsuhashi. "It is well settled that unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification do not suffice." In re Deblauwe, 222 USPQ 191, 196 (Fed. Cir. 1984). Mere lawyer's arguments and conclusory statements in the specification, unsupported by objective evidence, are insufficient to establish unexpected results." In re Wood, Whittaker, Stirling and Ohta, 199 USPQ 137, 140 (CCPA 1978). Applicants' arguments cannot take the place of evidence in the record, MPEP 716.01(c)II. Further, in making this argument regarding improved properties of appellants' alloy and articles appellants' versus Mitsuhashi's heat treated alloy and articles, appellants have not addressed how the properties of the instantly claimed alloy and article compare to the properties of Mitsuhashi's alloy and articles that have not been heat treated. Finally, in the decision mailed, July 22, 2008, the Board of Patent Appeals and Interferences stated, in affirming this rejection (decision, page 17, the last paragraph);

> In addition, Appellants have provided no evidence to support their statement that the parts of the present invention would be destroyed at the temperatures applied in Esser. Appellants' Specification discloses heat treatments at temperatures of up to 2200°F compared to 2282°F in Esser. (FF 3 and 9). Appellants' Specification does not indicate that heat treatments applied at temperatures above 2200°F would be detrimental to the claimed articles. (FF 4).

Although the BPAI made the above statement with respect to Esser it is considered to apply equally well to Mitsuhashi

Applicants argue that Mitsuhashi's article prior to heat treatment "cannot be considered to be the claimed article" (appellants' brief, page 4, the last paragraph) in that such an un-heat treated article would be an unfinished article that does not possess the properties desired by Mitsuhashi and would not possess "suitable oxidation and corrosion resistance for use in a turbine engine" (appellants' brief, page 4, the last paragraph). Appellants have provided no evidence in support of their statement that Mitsuhashi's un-heat treated article would not possess "suitable oxidation and corrosion resistance for use in a turbine engine". Further, when the products produced by the reference process are neither transitory nor ephemeral but are by nature tangible and permanent pending the subsequent treatment to which they are subjected, such products, though intermediate, are anticipatory of the product. Ex parte Brinton, 82 USPQ 112 (Bd. Pat. App. & Int. 1948).

(11) Related Proceeding(s) Appendix

Copies of the court or Board decision(s) identified in the Related Appeals and Interferences section of this examiner's answer are provided herein.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/John P. Sheehan/

Primary Examiner, Art Unit 1736

Conferees:

/Stanley S. Silverman/

Supervisor Primary Examiner Art Unit 1736

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Quality Assurance Specialist, TC 1700